

Claims

1. An integrated sensor device which is constructed into a single integrated circuit device comprising a detection unit that has an organic membrane, characteristics of which are changed through contact with gas or liquid containing substance to be measured, and a converter for converting the change of the characteristics to electric signal; a control unit for processing the signal representing the measurement result from the detection unit; and an antenna unit for transmitting the signal processed by the control unit to outside and for receiving energy necessary for the transmission and operations of the detection and control units from the outside.

2. An integrated sensor device which is constructed into a single integrated circuit device comprising a detection unit that consists of an ion sensible FET device for measuring pH concentration in aqueous solution and a reference electrode; a thermal sensor for correcting measurement result of the detection unit; a control unit for processing a signal representing measurement result from the detection unit; and an antenna unit for transmitting the signal processed by the control unit to outside and for receiving energy necessary for the transmission and operations of the detection and control units from the outside.

3. The integrated sensor device according to claim 1 or 2, wherein the control unit has memory for pre-storing correcting information to correct the measurement result of the detection unit, and in operation the control unit corrects the measurement result in accordance with the correcting information and transmits the corrected measurement result from the antenna unit.

4. A reading device comprising:

an antenna unit for receiving the measurement result transmitted from the integrated sensor device according to claim 1, 2, or 3 and for transmitting energy to

be supplied to the integrated sensor device; and

a display unit for displaying information on the measurement result received from the integrated sensor device through the antenna unit.

5. A measuring system comprising:

the integrated sensor device according to claim 1, 2, or 3;

a container for storing a plurality of the integrated sensor devices;

an actuator for actuating predetermined number of the integrated sensor devices stored in the container to be usable and for removing the deteriorated integrated sensor device;

a controller for controlling operation of the actuator based on decision of whether performance of the integrated sensor device is deteriorated or predetermined time for use terminates; and

an antenna unit for receiving the measurement result transmitted from the integrated sensor device in use and for transmitting energy to be supplied to the integrated sensor device.

6. A measuring system comprising:

the integrated sensor device according to claim 1, 2, or 3;

a plurality of containers, each of which stores the integrated sensor device one by one;

an actuator for actuating predetermined number of the integrated sensor devices stored in the container to be usable and for removing the deteriorated integrated sensor device;

a controller for controlling operation of the actuator based on decision of whether performance of the integrated sensor device is deteriorated or predetermined time for use terminates; and

an antenna unit for receiving the measurement result transmitted from the integrated sensor device in use and for transmitting energy to be supplied to the integrated sensor device.

7. The measuring system according to claim 5 or 6, wherein the container has a seal to prevent invasion of gas or liquid from outside.
8. The measuring system according to claim 7, wherein the container has absorbent inside to absorb substance that deteriorates the integrated sensor device.
9. A measuring system comprising:
the integrated sensor device according to claim 1, 2, or 3;
a plurality of containers, each of which has a lid partly or wholly made by thin membrane, for sealing the integrated sensor device one by one inside together with gas or liquid to maintain the integrated sensor device in stability;
an actuator for actuating predetermined number of the integrated sensor devices stored in the container to be usable and for removing the deteriorated integrated sensor device by opening an aperture in the thin membrane of the container;
a controller for controlling operation of the actuator based on decision of whether performance of the integrated sensor device is deteriorated or predetermined time for use terminates; and
an antenna unit for receiving the measurement result transmitted from the integrated sensor device in use and for transmitting energy to be supplied to the integrated sensor device.
10. A container device comprising storage for storing a plurality of the integrated sensor devices according to claim 1, 2, or 3 in seal.
11. A container device comprising storage for storing the integrated sensor device according to claim 1, 2, or 3 in seal one by one.